WHAT IS CLAIMED IS:

1. A method of changing a width of a variable-width substrate conveyor including (a) a pair of guide rails, (a) a feeding device for feeding a circuit substrate along the guide rails, (b) a pair of guide rails having respective guiding surfaces for guiding opposite side faces of the circuit substrate being fed by the feeding device, in a longitudinal direction of said pair of guide rails, and (c) a width changing device for moving said pair of guide rails relative to each other toward or away from each other, to change a distance between the pair of guide rails, for thereby changing the width of the variable-width substrate conveyor, said method comprising:

an image-taking step of operating an image-taking device to take an image of a portion of at least one of said pair of guide rails; and

a controlling step of controlling said width changing device on the basis of the image taken by said image-taking device.

2. A method according to claim 1, wherein said pair of guide rails consist of a stationary guide rail fixed in position and a movable guide rail which is movable toward and away from said stationary guide rail, wherein said image-taking step comprises a movable-guide-rail detecting step of operating said image-taking device to take an image of a portion of said movable guide rail, and detecting a position of the movable guide rail on the basis of the image taken by said image-taking device,

and said controlling step comprises controlling said width changing device on the basis of the position of the movable guide rail detected in said guide-rail detecting step, a position of said stationary guide rail, and a desired value of the distance between the stationary and movable guide rails, such that an actual value of said distance coincides with said desired value.

3. A method according to claim 1, wherein said pair of guide rails consist of a stationary guide rail fixed in position and a movable guide rail which is movable toward and away from said stationary guide rail, wherein said image-taking step comprises a moving step of moving said image-taking device to a position determined on the basis of a position of the stationary guide rail, and said controlling step comprises controlling said width changing device such that the position of the image-taking device coincides with a position of a portion of said movable guide rail.

4. A method according to claim 1, wherein said pair of guide rails consist of a stationary guide rail fixed in position and a movable guide rail which is movable toward and away from said stationary guide rail, wherein said controlling step comprises operating said width changing device to move said movable guide rail, while moving said image-taking device so as to follow a movement of a portion of said movable guide device, and controlling said width changing device such that said movable guide rail is moved to a position determined on the basis

of a position of said stationary guide rail.

5. A method according to claim 1, wherein said pair of guide rails consist of a stationary guide rail fixed in position and a movable guide rail which is movable toward and away from said stationary guide rail, wherein said controlling step comprises moving said image-taking device toward a desired position at which the width of the substrate conveyor is changed to a desired value, and controlling said width changing device so as to minimize an amount of deviation of a position of the image of a portion of said movable guide rail and a predetermined position within an imaging area of said image-taking device.

6. A method according to claim 2, comprising a stationary-guide-rail detecting step of operating said image-taking device to take an image of a portion of said stationary guide rail, and detecting a position of the stationary guide rail, as said portion of said at least one of said pair of guide rails, on the basis of the image of said portion of the stationary guide rail taken by the image-taking device.

7. A method according to claim 1, wherein said pair of guide rails includes a movable guide rail, said method comprising a step of storing in memory means position data representative of a position of a portion of said movable guide rail which was detected during a last operation of said width changing device to change the width of said substrate

conveyor, and a positioning step of positioning said image-taking device on the basis of said position data stored in said memory means.

8. A method according to claim 1, wherein said pair of guide rails includes a movable guide rail, said method comprising a searching step of moving said image-taking device over a predetermined search range determined by a range of an operating stroke of said movable guide rail, to search a portion of the movable guide rail, as said portion of said at least one of said pair of guide rails.

9. A method according to claim 1, wherein said step of operating an image-taking device to take an image of a portion of at least one of said pair of guide rails comprises taking a fiducial mark provided on said portion of said at least one of said pair of guide rails.

10. A method according to claim 1, wherein said pair of guide rails have a plurality of pairs of fiducial marks which are spaced apart from each other in a longitudinal direction of the guide rails, each of said pairs consisting of two fiducial marks located on said pair of guide rails, respectively, at a same position in said longitudinal direction, and said step of controlling said width changing device comprises controlling said width changing device on the basis of images of said plurality of pairs of fiducial marks taken by said image-taking device.

11. A method according to claim 10, wherein said width changing device is capable of changing said distance of said pair of guide rails at a plurality of positions in said longitudinal direction, independently of each other, and said step of controlling said width changing device comprises controlling said width changing device such that the distance between said fiducial marks of each of said plurality of pairs coincides with a predetermined desired value.

12. A method according to claim 1, wherein said image-taking device is provided by an image-taking device operable to take an image of at least a portion of said circuit substrate, for detecting a position of the circuit substrate which has been fed by said feeding device of said variable-width substrate conveyor.

13. A method according to claim 12, wherein said image-taking device takes an image of a fiducial mark provided on at least said portion of said circuit substrate.

14. A variable-width substrate conveyor comprising:

a feeding device for feeding a circuit substrate along the guide rails;

a pair of guide rails having respective guide surfaces for guiding opposite side faces of the circuit substrate being fed by

the feeding device, in a longitudinal direction of said pair of guide rails;

a width changing device for moving said pair of guide rails relative to each other toward or away from each other, to change a distance between the pair of guide rails, for thereby changing a width of the variable-width substrate conveyor;

an image-taking device operable to take an image of a predetermined portion of at least one of said pair of guide rails;

a moving device operable to move said image-taking device in at least a direction of movement of said pair of guide rails relative to each other, and to detect a position of said image-taking device;

an image processing device operable to process image data which are obtained by said image-taking device and which represent said image of said predetermined portion of said at least one of said pair of guide rails; and

a control device operable to control said width changing device on the basis of a result of processing of said image data by said image processing device.

15. A variable-width conveyor according to claim 14, wherein said pair of guide rails consist of a stationary guide rail fixed in position and a movable guide rail which is movable toward and away from said stationary guide rail, and said image-taking device is operable to take an image of a predetermined portion of said stationary guide rail, as well as an image of a predetermined portion of said movable guide rail, as

said predetermined portion of said at least one of said pair of guide rails.

16. A variable-width conveyor according to claim 14, wherein a fiducial mark is provided on said predetermined portion of said at least one of said pair of guide rails, and said image-taking device is operable to take an image of said fiducial mark, as the image of said predetermined portion of said at least one of said pair of guide rails.

17. A method of changing a width of a variable-width substrate conveyor in a substrate working system including (i) said substrate conveyor, (ii) a working device for performing a predetermined working operation on a circuit substrate which is fed to and stopped at a predetermined stop position by said substrate conveyor, (iii) an image-taking device for taking an image of a predetermined part of said circuit substrate stopped at said predetermined stop position, and (iv) a moving device for moving the image-taking device in at least a first direction parallel to a direction of said width of the substrate conveyor and detecting apposition of said image-taking device, said substrate conveyor including (a) a feeding device for feeding said circuit substrate in a second direction perpendicular to said first direction, (b) a pair of guide rails having respective guiding surfaces for guiding opposite side faces of the circuit substrate parallel to said second direction while the circuit substrate is fed by said feeding device, and (c) a width changing device for

moving at least one of said guide rails relative to the other in said first direction to change a distance between said guiding surfaces, for thereby changing the width of the substrate conveyor, said method comprising:

an initial-width obtaining step of obtaining an initial value of the width of said substrate conveyor;

an imaging step of operating said moving device, after said initial value is obtained, to move said image-taking device to an image-taking position at which an image of a predetermined portion of at least one of said pair of guide rails can be taken by said image-taking device, and operating said image-taking device to take said image of said predetermined portion;

a position-obtaining step of obtaining a position of said predetermined portion of said at least one of said pair of guide rails, on the basis of said image-taking position of said image-taking device and a position of the image of said predetermined portion within an imaging area of said image-taking device; and

a width-changing step of operating said width changing device to move said pair of guide rails relative to each other in said first direction, for moving said predetermined portion of said at least one of said pair of guide rails, to a desired position which is determined on the basis of the position of said predetermined portion obtained in said position-obtaining step, said initial value of the width of the substrate conveyor, and a width of the circuit substrate to be fed by the substrate conveyor.

18. A method according to claim 17, wherein said initial-width obtaining step comprises placing a reference board having a known reference width on said substrate conveyor, and adjusting the width of said substrate conveyor to said initial value, by adjusting said distance between said guiding surfaces to a value suitable for guiding said reference board.

19. A method according to claim 17, wherein said circuit substrate is provided with at least one fiducial mark which functions as said predetermined part.

20. A method according to claim 17, wherein said imaging step comprises operating said image-taking device to take an image of a fiducial mark which is provided on said at least one of said pair of guide rails and which functions as said predetermined portion.

21. A method according to claim 17, wherein said substrate working system includes:

a working head for performing said predetermined working operation; and

a head moving device for moving said working head in a plane parallel to a working surface of said circuit substrate stopped at said predetermined stop position;

and wherein said imaging step comprises utilizing said head moving device as said moving device for moving said image-taking device.

22. A method according to claim 17, wherein said position-obtaining step comprises obtaining, as said position of said predetermined portion of said at least one of said pair of guide rails, a position of said image-taking device at which the position of said image of said predetermined portion is located at a predetermined position within said imaging area of said image-taking device.

23. A method according to claim 17, wherein said width changing device includes as a drive source thereof a stepping motor, and said width-changing step comprises operating said stepping motor by an angle corresponding to a difference between said initial value of the width of said substrate conveyor and a sum of the width of the circuit substrate to be fed by said substrate conveyor and a total amount of gaps between said guiding surfaces and said opposite side faces of said circuit substrate.

24. A method according to claim 17, wherein said width-changing step comprises a step of checking whether the width of said substrate conveyor has been changed to a value suitable for the width of the circuit substrate to be fed by the substrate conveyor, said checking being effected on the basis of the position of said image of said predetermined portion of said at least one of said pair of guide rails.

25. A method according to claim 24, wherein said step of checking comprises; moving said image-taking device in said first direction from said image-taking position by a distance equal to a difference between said initial value of the width of said substrate conveyor and a sum of the width of the circuit substrate to be fed by said substrate conveyor and a total amount of gaps between said guiding surfaces and said opposite side faces of said circuit substrate; operating said image-taking device to take another image of said predetermined portion of said at least one of said pair of guide rails, after the movement of said image-taking device by said distance; and effecting said checking on the basis of said another image.

26. A method according to claim 17, wherein said substrate conveyor is provided in combination with at least one of an upstream conveyor and a downstream conveyor which are disposed on respective upstream and downstream sides of said substrate conveyor, each of said at least one of said upstream and downstream conveyors including a feeding device, a pair of guide rails and a width changing device, which are identical with those of said substrate working system, said method further comprising a width-matching checking step of checking whether the position of said predetermined portion of said at least one of said pair of guide rails of said substrate conveyor is matched in said first direction with that of a position of a predetermined portion of at least one of said pair of guide rails of each of said at least one of said upstream and

downstream conveyors, said width-matching checking step comprising operating said image-taking device to take an image of said predetermined portion of said at least one of said pair of guide rails of said each of said at least one of said upstream and downstream conveyors.

27. A method of matching widths of a substrate conveyor and at least one of an upstream conveyor and a downstream conveyor in a working system including (i) said substrate conveyor, (ii) said at least one of said upstream and downstream conveyors disposed on respective upstream and downstream sides of said substrate conveyor, (iii) a working device for performing a predetermined working operation on a circuit substrate which is fed to and stopped at a predetermined stop position by said substrate conveyor, (iv) an image-taking device for taking an image of a predetermined part of said circuit substrate stopped at said predetermined stop position, and (v) a moving device for moving the image-taking device in at least a first direction parallel to a direction of said width of the substrate conveyor, each of said substrate conveyor and said at least one of said upstream and downstream conveyors including (a) a feeding device for feeding said circuit substrate in a second direction perpendicular to said first direction, (b) a pair of guide rails having respective guiding surfaces for guiding opposite side faces of the circuit substrate parallel to said second direction while the circuit substrate is fed by said feeding device, and (c) a width changing device for moving said guide rails relative to each other

in said first direction to change a distance between said guiding surfaces, said method comprising:

a first imaging step of operating said moving device to move said image-taking device to a first image-taking position at which an image of a predetermined portion of at least one of said pair of guide rails of said substrate conveyor can be taken by said image-taking device, and operating said image-taking device to take said image of said predetermined portion of said substrate conveyor;

a second imaging step of operating said moving device, after or before said first imaging step, to move said image-taking device to a second image-taking position at which an image of a predetermined portion of at least one of said pair of guide rails of said at least one of said upstream and downstream conveyors can be taken by said image-taking device, and operating said image-taking device to take said image of said predetermined portion of said at least one of said upstream and downstream conveyors; and

a width-matching step of matching the widths of said substrate conveyor and said at least one of said upstream and downstream conveyors, on the basis of said images of said predetermined portions of said at least one of said pair of guide rails of said substrate conveyor and said at least one of said upstream and downstream conveyors.